

# **The Proposed Approach to STEP Modularization**

**San Francisco SC4 and WG Meetings**

**January 26-30, 1999**

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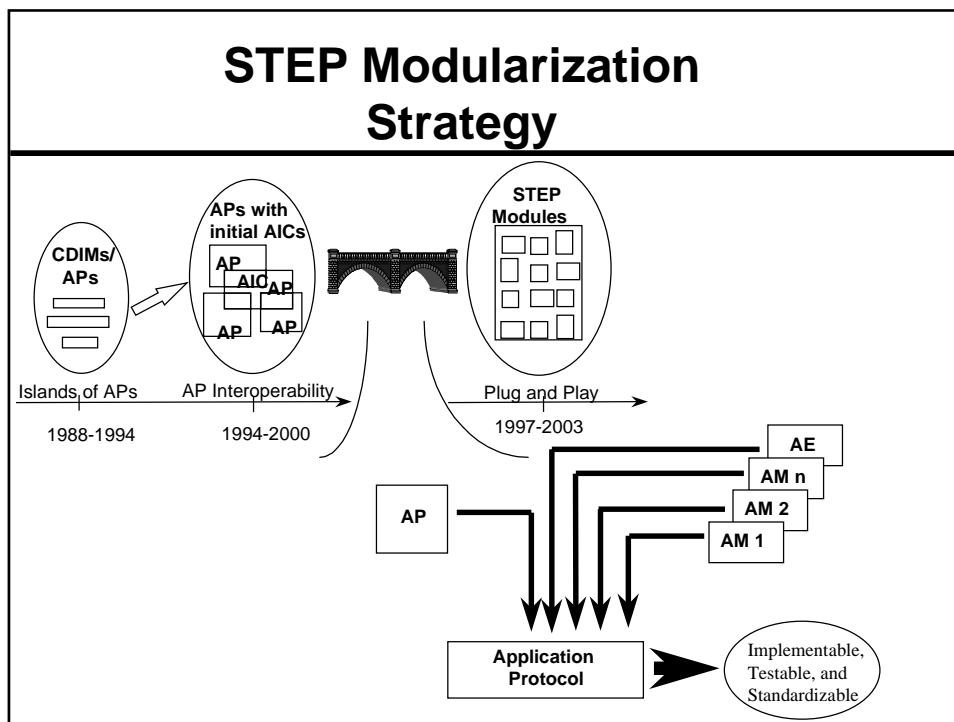
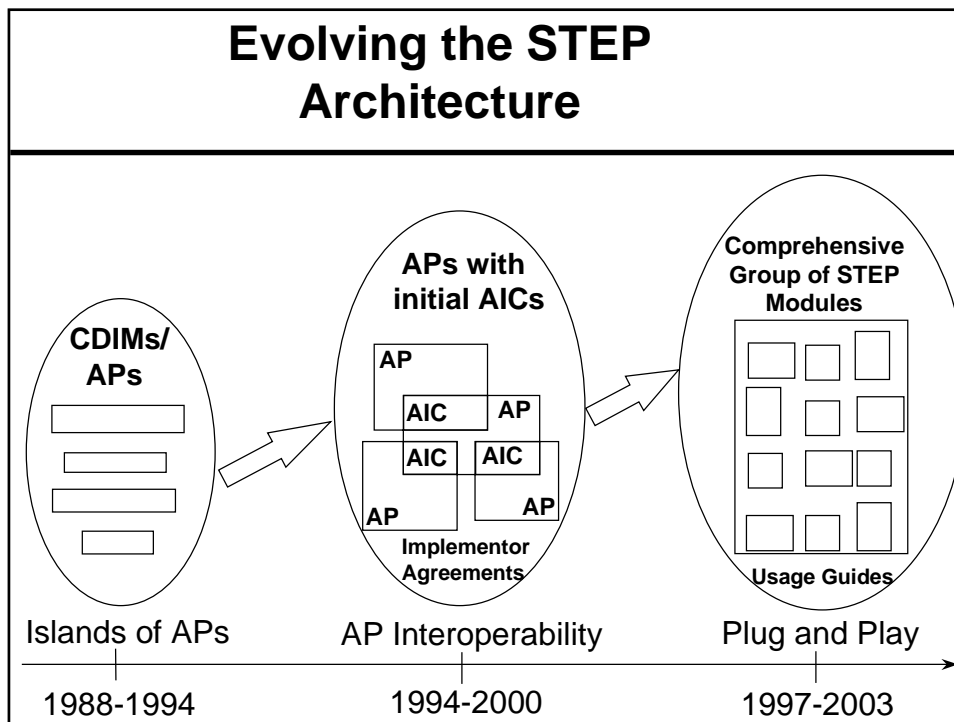
## **Agenda**

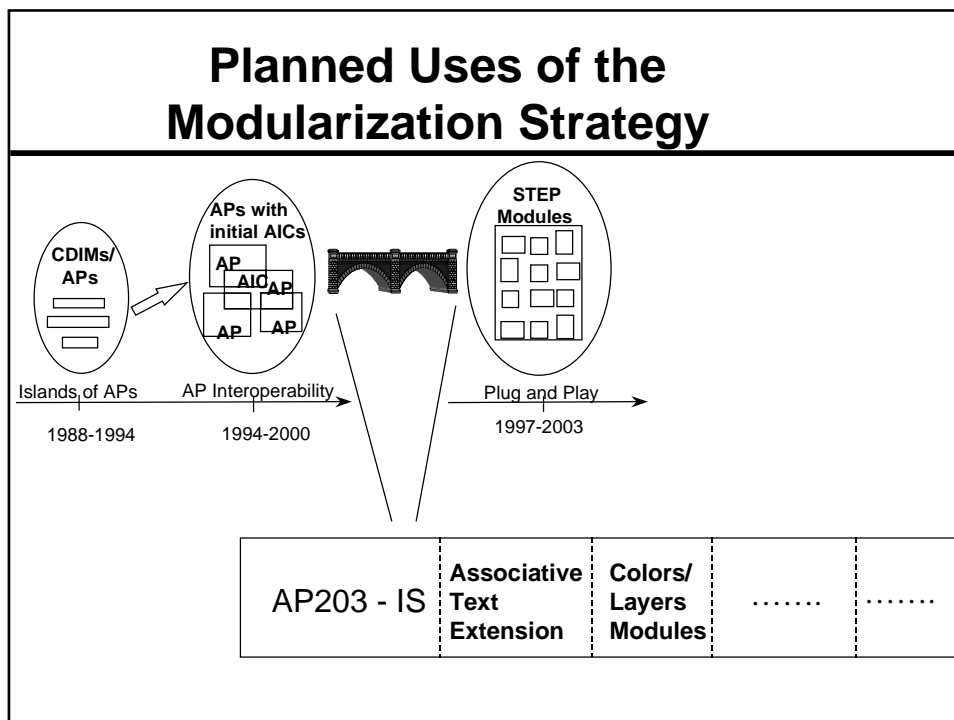
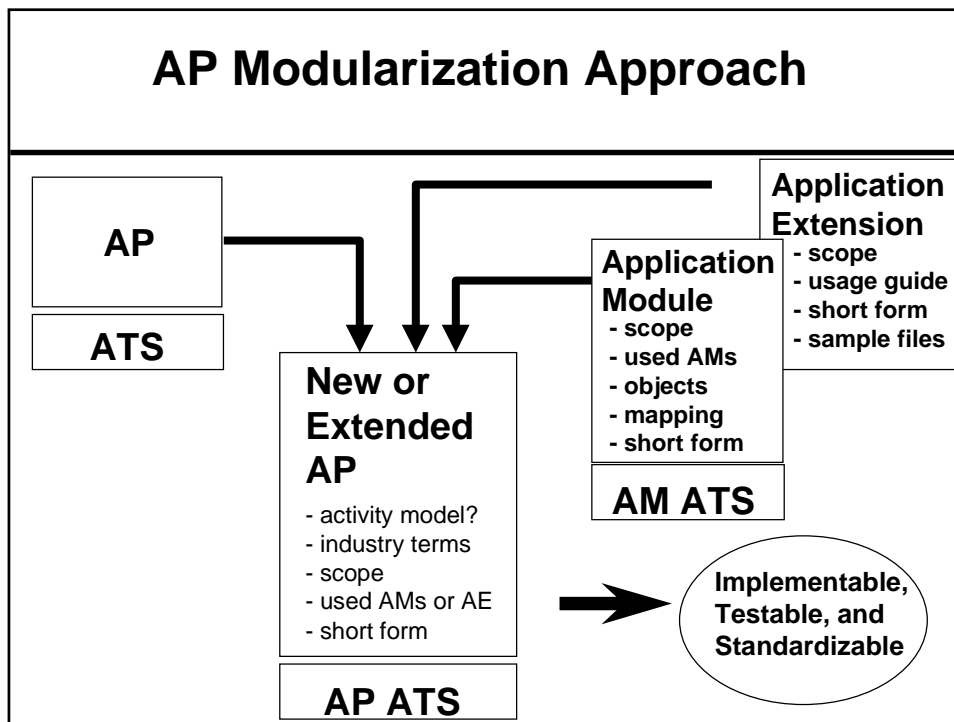
- **Overview of the Modularization Strategy**
- **Module, Extension and AP Contents**
- **Overview of the Standardization Strategy**
- **Summary**

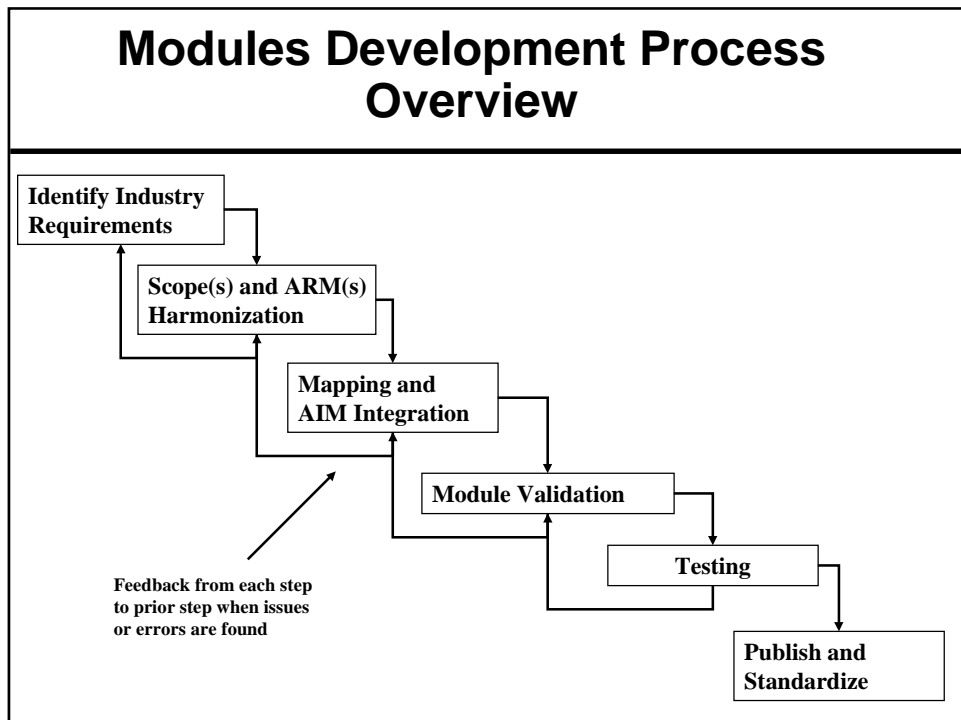
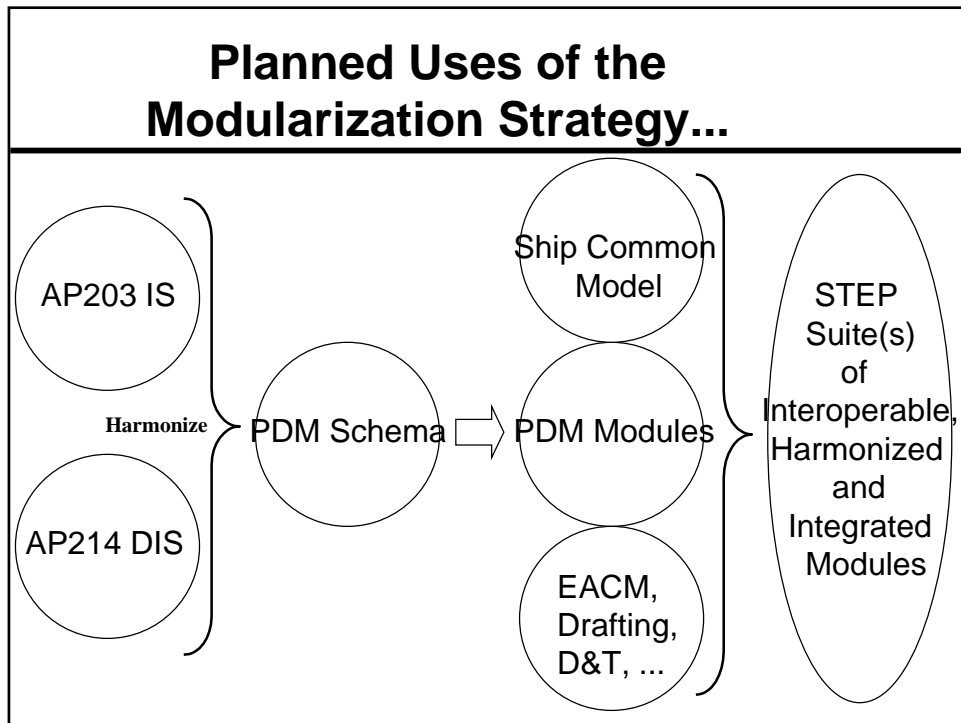
## **Overview of the Modularization Strategy**

### **Major Requirements for Modularization**

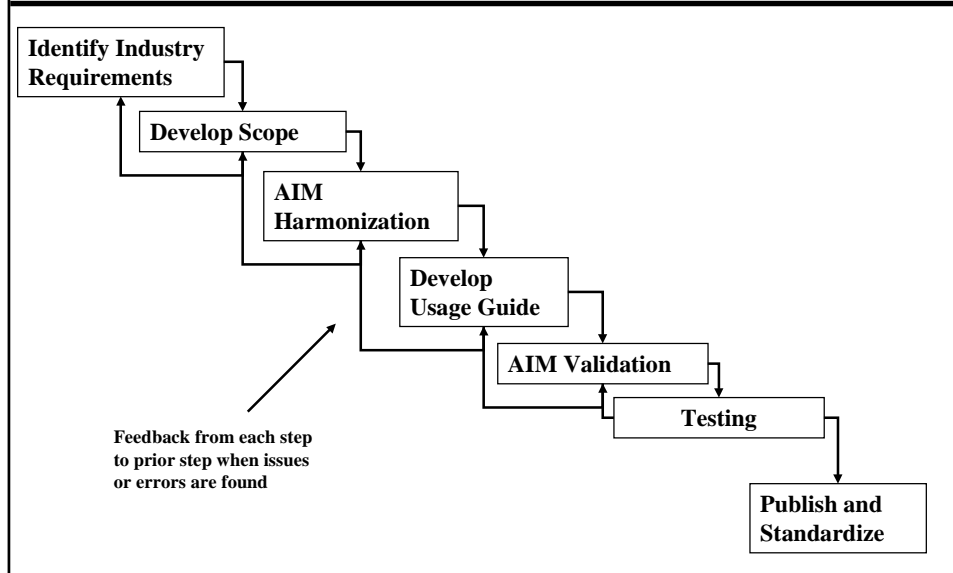
- High cost and lengthy time for developing an AP
- Companies requiring the implementation of a combination of multiples APs or AP extensions
- Expectation from vendors for the reuse of application software
- Duplication and repeated documentation of the same requirements in different APs
- Reuse of data generated by an implementation of one or more APs, by an implementation of one or more different APs (AP interoperability)







## Extension Development Process Overview



## SC4 STEP Modules Harmonization Team Proposal

- One team responsible for assisting in the harmonization of Scope, ARMs, mappings and AIMS of all modules and extensions with subteam responsible for interpretations
- Team requirements:
  - Knowledge of the complete set of STEP module ARMs
  - Industry domain understanding
  - Integrated Resource knowledge to review interpretations
- Team functions:
  - Work with AP/AM Development Team to agree on ARM
  - Work with AP/AM Development Team to agree on interpretation or AIM for AM and AE
  - Provide input to SC4 member bodies as to level of consensus and harmonization in specific modules and extensions

## **Module, Extension and AP Contents**

### **Modules : The Next Generation AIC**

- **Basic objective of Application Interpreted Construct (AIC) and Application Module (AM) are quite similar**
- **The approach to the use and creation of an AM is different**
  - Take a completely component based approach to AP development
  - Document the same item or concept only once
- **AMs include a harmonized set of requirements which is lacking in AICs today**
- **The perspective for modularization is for implementors and users as well as for standards developers**
- **The approach includes proposing normative EXPRESS ARMs in an application module**
  - Allows use of EXPRESS-X capabilities
- **Compatible with and enforces the AP Interoperability activities**

## **Extensions : A precursor to modules**

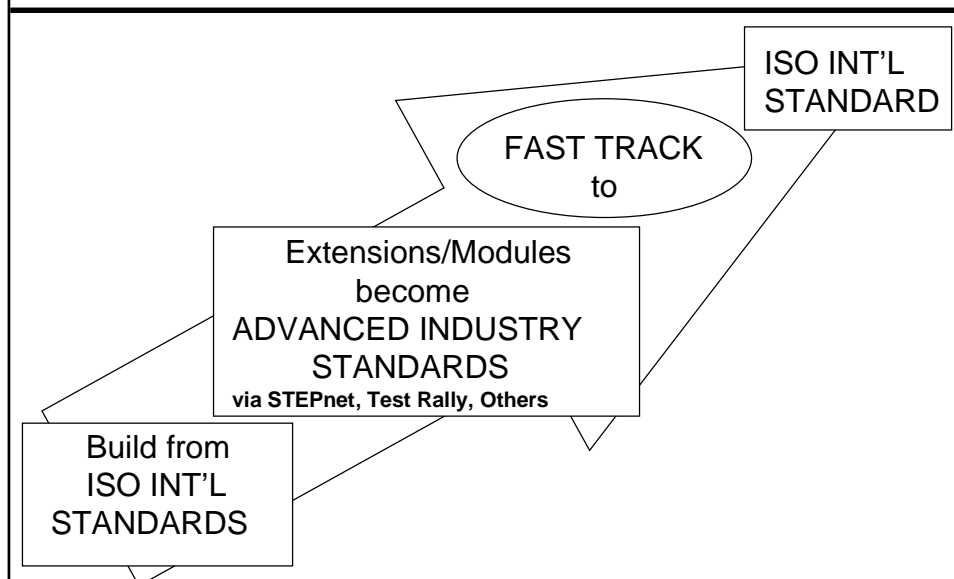
- **Application extensions are the reuse of a solution found in one or more APs in an extension to another AP**
- **Remodeling the requirements in the extension is not required**
- **Extensions provide a good migration path from today's architecture to the future modularized architecture**
- **Extensions work - we already have experience in developing extensions and they have been implemented by vendors**
- **Compatible with and enforces AP Interoperability activities**
- **Extensions are modules with the following limitations:**
  - Not necessarily reusable across many APs
  - Requirements documented using text rather than an ARM
  - Not allowed for new development as we need an ARM to perform requirements analysis and mapping to constrain the AIM

## **APs : Modular and/or Extended**

- **A modular AP is a documented use of an Application Module for a specific business process**
  - **A single AM is the data specification for the AP**
    - » The "big" AM uses other AMs and may add rules
  - **Conformance classes are defined in the AP**
    - » Proposing allowing CCs to be subset of modules and/or rules
  - **An Activity Model may be defined in the AP**
  - **Industry terminology mappings from generic AM terminology may be defined in an AP**
- **An extended AP is an Application Extension applied to an existing AP**
  - **Limited scope and reuse**
  - **New or modified conformance classes allowed**

## Overview of the Standardization Strategy

### STEP Standardization Process Improvement Concept



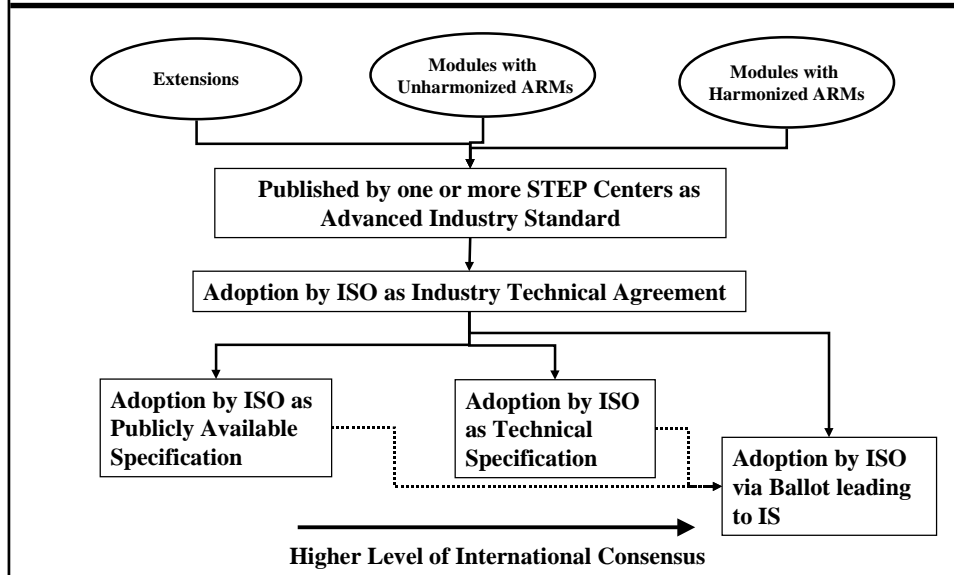
## **The new ISO Normatively Referenceable “Standards”**

- **Industry Technical Agreement (ITA)**
  - ISO recognition of a technical document resulting from an international workshop outside the normal SC4 structure with administrative support from a designated member body
- **Publicly Available Specification (PAS)**
  - ISO adoption of a technical document which has less international consensus than a TS
    - » WG approval and P-member majority approval
- **Technical Specification (TS)**
  - ISO adoption of a technical document which has less international consensus than an IS
    - » formal voting process requiring 2/3 of the P-members voting
  - Replaces existing Technical Report (TR) (used for ATS)

## **Proposed STEP modularization use of the new ISO “Standards”**

- **Industry Technical Agreement (ITA)**
  - SC4 recognition via SC4 Resolution of AEs, AMs and APs referencing AEs or AMs resulting from an international workshop
- **Publicly Available Specification (PAS)**
  - SC4 adoption via SC4 Resolution of AEs, AMs and APs referencing AEs or AMs resulting from an approved SC4 project after approval by an SC4 Working Group
- **Technical Specification (TS)**
  - SC4 adoption via 2/3 majority in one three month ballot of AEs, AMs and APs referencing AEs or AMs after approval as a PAS or in a previous three month “CD” ballot
- **International Standard (IS)**
  - APs or AMs approved as PASs start at DIS ballot
  - APs or AMs approved as TSs start at FDIS ballot
  - AEs cannot become IS but IS APs may reference them

## The Standardization Process Overview



## Summary

## **Modularized Standards**

- **AMs are the next generation of AICs - only more complete**
- **AMs will be reusable units of capability**
- **Some AMs will be complete and potentially implementable**
- **AEs allow modular extension to existing APs**
- **Modularized AP and AM development should cost much less than AP development today**
- **AMs may reuse other AMs**
- **Approach could be extended to incorporate other SC4 standards**
- **Technical issues do remain but proposed approaches are available**
  - **SELECT type completion is a problem**
    - » **Proposed approach is to use a template similar to the Part 41 management resource completion methodology in the ARM of some “incomplete” AMs which more application specific AMs complete**
- **This approach is designed to take advantage of coming EXPRESS-2 and EXPRESS-X capabilities**